International Journal of GEOGRAPHICAL INFORMATION SCIENCE

Editors: P. Fisher • H. Miller • B. Lees

Contents of Volume 17

Taylor & Francis
Taylor & Francis Group

INTERNATIONAL JOURNAL OF GEOGRAPHICAL INFORMATION SCIENCE

Founding Editor: Professor J. T. Coppock

EDITOR
Professor Peter F. Fisher,
Department of Geography,
University of Leicester,
Leicester LE1 7RH,
United Kingdom
Tel: +44 (0) 116 252 3839
Fax: +44 (0) 116 252 3854
Email: pete.fisher@le.ac.uk

North American Editor:
Prof Harvey Miller,
Department of Geography,
University of Utah,
260 S. Central Campus Dr. Rm. 270,
Salt Lake City,
UT 84112-9155, USA
Tel: +1 801 585 3972
Fax: +1 801 581 8219
harvey.miller@geog.utah.edu
http://www.geog.utah.edu/~hmiller/IJGIS/

Western Pacific Editor:
Dr Brian Lees,
Department of Geography,
Australian National University,
School of Resource Management,
ACT 0200 Australia
Tel: 06 249 3795
Fax: 06 249 3770
brian.lees@anu.edu.au

Book Review Editor:
Dr Nicholas J. Tate
Department of Geography
University of Leicester
Leicester LE1 7RH
United Kingdom
Tel: +44 (0) 116 223 1320
Fax: +44 (0) 131 252 3854
n.tate@le.ac.uk

EDITORIAL BOARD

D. Abel
Canberra, Australia
Marc Armstrong
Iowa City, USA
P. A. Burrough
Utrecht, The Netherlands
H. Campbell
Sheffield, UK
Keith Clarke
Santa Barbara, USA
M. Ehlers
Vechta, Germany
Dozie Ezigbalike
Gabonne, Botswana
A. Frank
Vienna, Austria
M. Gahegan
State College, USA
C. Gold
Quebec, Canada
M. Goodchild
Santa Barbara, USA
O. Gunther
Berlin, Germany
S. Guptill
Reston, USA
F. Harvey
Minneapolis, USA
G. Hunter
Melbourne, Australia
W. Huxhold
Milwaukee, USA
J. Krishnayya
Systems Research Institute, India
R. Laurini
Lyon, France
Zhilin Li
Hong Kong
J.-C. Muller
Bochum, Germany
T. Nyerges
Seattle, USA
A. Okabe
Tokyo, Japan
B. C. Ooi
Singapore
R. Pascoe
Christchurch, New Zealand
D. Peuquet
State College, USA
T. Sarjakoski
Masala, Finland
A. Skidmore
ITC, The Netherlands
Z. Stancic
Lubjliana, Slovenia
K.-Y. Whang
Korea
R. Weibel
Zurich, Switzerland
G. Wilkinson
Kingston, UK
M. Worboys
Orono, USA
M. Yuan
Norman, USA

International Journal of Geographical Information Science

Taylor & Francis, London, Philadelphia

Contents of Volume 17

Number 1

Research Articles

Vectorial algebra algorithms for calculating terrain parameters from DEMs and solar radiation modelling in mountainous terrain
J. G. Corripio 1

Extending GIS-based visual analysis: the concept of *visualscapes*
M. Llobera 25

Gambling with randomness: the use of pseudo-random number generators in GIS
K. Van Niel and S. W. Laffan 49

Review Article

Is inductive machine learning just another wild goose (or might it lay the golden egg)?
M. Gahegan 69

Book reviews 93

Number 2

Research Articles

Automating the administration boundary design process using hierarchical spatial reasoning theory and geographical information systems
S. Eagleson, F. Escobar and I. Williamson 99

An incremental construction algorithm for Delauney triangulation using the nearest-point paradigm
B. Žalik and I. Kolingerová 119

Stability of the surface generated from distributed points of uncertain location
Y. Sadahiro 139

Agent-based modelling environment for spatial decision support
R. R. Sengupta and D. A. Bennett 157

Extending the automated zoning procedure to reconcile incompatible zoning systems
D. Martin 181

Book reviews 197

Number 3

Research Articles

A software framework to create vector-topology in parallel GIS operations
M. J. Mineter 203

Rough and fuzzy geographical data integration
O. Ahlqvist, J. Keukelaar and K. Oukbir 223

Fuzzy set approach to assessing similarity of categorical maps
A. Hagen 235

Modelling error propagation in vector-based buffer analysis
W. Shi, C. K. Cheung and C. Zhu 251

Wavelet triangulated irregular networks
J. Wu and K. Amaratunga 273

Book reviews 291

Number 4

Research Articles

Estimating local variations in land use statistics
A. Geddes, A. Gimona and D. A. Elston 299

Dynamic run-time application development using CORBA objects and XML in the field of distributed GIS
M. Preston, P. Clayton and G. Wells 321

An object model with parametric polymorphism for dynamic segmentation
B. Huang 343

Extensions to least-cost path algorithms for roadway planning
C. Yu, J. Lee and M. J. Munro-Stasiuk 361

A GIS-embedded system to support land consolidation plans in Galicia
J. Touriño, J. Parapar, R. Doallo, M. Boullón, F. F. Rivera, J. D. Bruguera, X. P. González, R. Crecente and C. Álvarez 377

Book reviews 397

Number 5

Guest Editorial

Semantic reference systems
W. Kuhn 405

Research Articles

An object-oriented data model for complex objects in three-dimensional geographical information systems
W. Shi, B. Yang and Q. Li 411

Comparing two sets of polygons
M. Gomboši, B. Žalik and S. Krivograd 431

A GIS-based Spatial Pattern Analysis Model for eco-region mapping and characterization
Y. Zhou, S. Narumalani, W. J. Waltman, S. W. Waltman and M. A. Palecki 445

Modelling urban growth and landscape changes in the Atlanta metropolitan area
X. Yang and C. P. Lo 463

Book Reviews 489

Number 6

Research Articles

Infometric and statistical diagnostics to provide artificially-intelligent support for spatial analysis: the example of interpolation
C. H. Jarvis, N. Stuart and W. Cooper 495

Modelling the history of semi-structured geographical entities
E. Stefanakis 517

Assessing vulnerability to earthquake hazards through spatial multicriteria analysis of urban areas
T. Rashed and J. Weeks 547

Usability evaluation and PPGIS: towards a user-centred design approach
M. Haklay and C. Tobón 577

Book Reviews 593

Number 7

Research Articles

Wavelets applied to simplification of digital terrain models
J. T. Bjørke and S. Nilsen 601

A comparison of two methods to create tracks of moving objects: linear weighted distance and constrained random walk
E. A. Wentz, A. F. Campbell and R. Houston 623

Increasing the spatial resolution of agricultural land cover maps using a Hopfield neural network
A. J. Tatem, H. G. Lewis, P. M. Atkinson and M. S. Nixon 647

The discrete dynamics of small-scale spatial events: agent-based models of mobility in carnivals and street parades
M. Batty, J. Desyllas and E. Duxbury 673

Maximizing spatial congruence of observed and DEM-delineated overland flow networks
T. A. Endreny and E. F. Wood 699

Book Reviews 715

Number 8

Research Articles

Formal information modelling for standardisation in the spatial domain
S. Winter and S. Nittel 721

Automated map generalization with multiple operators: a simulated annealing approach
J. M. Ware, C. B. Jones and N. Thomas 743

Knowledge discovery from soil maps using inductive learning
F. Qi and A.-X. Zhu 771

Comparison of polynomial models for land surface curvature calculation
J. Schmidt, I. S. Evans and J. Brinkmann 797

Book Reviews 815

Index of Authors 821